

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**TREE/SHRUB ESTABLISHMENT**

(Acre)

**CODE 612**

**DEFINITION**

Establishing woody plants by planting seedlings or cuttings, direct seeding, or natural regeneration.

**PURPOSE**

To establish woody plants for: forest products, wildlife habitat, long-term erosion control, and improvement of water quality, waste treatment, reduction of air pollution, sequestration of carbon, energy conservation, and enhancement of aesthetics.

**CONDITIONS WHERE PRACTICE APPLIES**

On any area where woody plants can be grown.

**CRITERIA**

**General Criteria Applicable To All Purposes**

Species and stocking rates will be adapted to site conditions and suitable for the planned purpose(s). [Table 1. \*Species for Tree and Shrub Plantings in Massachusetts\*, provides guidance on matching species with site conditions.](#)

Only viable, high-quality, and adapted planting stock or seed will be used.

Planting dates and care in handling and planting of the seed, cuttings or seedlings will ensure that planted materials have an acceptable rate of survival.

Site preparation shall be sufficient for establishment and growth of selected species. [Competing vegetation will be controlled](#)

[through appropriate site preparation. See FOREST SITE PREPARATION \(490\).](#)

Adequate seed or advanced reproduction needs to be present or provided for when using natural regeneration to establish a stand. [Use appropriate USDA Forest Service silvicultural guides or other professional recommendations to determine the adequacy of advance regeneration.](#)

Timing and use of planting equipment will be appropriate for the site and soil conditions. [Use any method of planting that accomplishes the following:](#)

- [Trees and shrubs will be planted at the same approximate depth as they grew in the nursery, i.e., with the root collar at ground level.](#)
- [Trees and shrubs will be planted approximately vertical without doubling the roots.](#)
- [Soil will be firmly packed around the roots.](#)

The acceptability and timing of coppice regeneration shall be based on species, age, and diameter.

The planting will be protected from unacceptable impacts from pests, wildlife, livestock or fire. [Livestock will be excluded. To avoid rodent damage, seedlings will be mulched, where feasible and necessary.](#)

[Replanting will be required when survival is inadequate to support the intended use.](#)

Comply with applicable federal, state and local laws and regulations during the installation, operation and maintenance of this practice.

### **Additional Criteria For Improving or Restoring Natural Diversity**

Species selected will be indigenous to the site and will reflect species composition of the desired stands. Plant species currently listed as invasive in Massachusetts will not be used.

### **Additional Criteria for the Purposes of Landscape and Beautification, To Provide Shade, and To Provide Wildlife Habitat**

Each site will be evaluated to determine if mulching, supplemental water or other cultural treatments will be needed to assure adequate survival and growth.

### **CONSIDERATIONS**

When underplanting, trees should be planted sufficiently in advance of overstory removal to ensure full establishment. Overstory removal must be carefully planned and timed to minimize damage to planted seedlings.

All planting stock and seed should be purchased from nurseries that are known to be using locally adapted seed, seedlings or cuttings. Priority will be given to plant materials that have been selected and tested in tree/shrub improvement programs. All plant materials should comply with minimum standards of the American Nursery and Landscape Association, USDA Forest Service, or a state-approved nursery.

Plans for landscape and beautification plantings should consider foliage color, color and season of flowering and mature plant height and width.

Where multiple species are available to accomplish the establishment objective, consideration should be given to selecting the species which best meet wildlife needs.

Tree/shrub arrangement and spacing should allow for access for the planned purpose(s).

Residual chemical carryover should be considered prior to planting.

Species considered locally invasive or noxious should not be used.

Species used to treat waste should have fast growth characteristics, extensive root systems, capable of high nutrient uptake, and may produce wood/fiber products in short rotations.

For optimal carbon storage, select plant species that are adapted to the site to assure strong health and vigor and plant the full stocking rate for the site.

### **PLANS AND SPECIFICATIONS**

Designs and specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, narrative statements in the conservation plan, or other acceptable documentation. NRCS VEGSPEC computer program may be used to identify species and develop a job sheet.

Plans and specifications will include the following: adapted tree and shrub species for the purposes outlined, spacing, site preparation, planting methods, cultural practices and maintenance requirements that are applicable; and variations in methods and species between interplanting, underplanting, and planting in open areas. Separate specifications are provided for each of these planting methods.

The following practices may be used in conjunction with this standard:

- Riparian Forest Buffer (391)
- Forest Site Preparation (490)
- Critical Area Planting (342),
- Field Borders (386)
- Windbreak/Shelterbelt Establishment (380)
- Windbreak/Shelterbelt Renovation (650)
- Wildlife Wetland Habitat Management (644)
- Wildlife Upland Habitat Management (645)
- Fish Stream Improvement (395)
- Wetland Restoration (657)

Early Successional Habitat Development/Management (647)

## **OPERATION AND MAINTENANCE**

The following actions shall be carried out to insure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance):

If needed, competing vegetation will be controlled until the woody plants are established. Noxious weeds will be controlled.

Replanting will be required when survival is inadequate.

Supplemental water will be provided as needed.

The trees and shrubs will be inspected after the first and second years and protected from adverse impacts including insects, diseases or competing vegetation. The trees or shrubs will also be protected from fire and damage from livestock or wildlife.

Periodic applications of nutrients may be needed to maintain plant vigor.



TABLE 1. SPECIES FOR TREE AND SHRUB PLANTINGS IN MASSACHUSETTS

TREES FOR DRY-OPEN SITES		
Scientific Name	Common Name	Mature Height
<i>Betula populifolia</i>	Gray Birch	30'
<i>Juniperis virginiana</i>	Eastern Red Cedar	10-75'
<i>Pinus resinosa</i>	Red Pine	70'
<i>Pinus rigida</i>	Pitch Pine	50'
<i>Pinus strobus</i>	White Pine	80'
<i>Quercus rubra</i>	Red Oak	70'
<i>Quercus coccinea</i>	Scarlet Oak	70'
<i>Quercus velutina</i>	Black Oak	70'

  

SHRUBS FOR DRY-OPEN SITES		
Scientific Name	Common Name	Mature Height
<i>Amelanchier canadensis</i>	Shadbush	15'
<i>Ceanothus americanus</i>	New Jersey Tea	4'
<i>Comptonia peregrina</i>	Sweetfern	4'
<i>Cornus racemosa</i>	Gray Dogwood	6-10'
<i>Gaylussacia baccata</i>	Black Huckleberry	1'
<i>Hypericum prolificum</i>	Shrubby St. Johnswort	4'
<i>Juniperus communis</i>	Pasture Juniper	2'
<i>Myrica pensylvanica</i>	Bayberry	6'
<i>Prunus maritima</i>	Beachplum	6'
<i>Rhus aromatica</i>	Fragrant Sumac	3'
<i>Rhus copallina</i>	Shining Sumac	4-10'
<i>Rhus glabra</i>	Smooth Suma	9-15'
<i>Rosa carolina</i>	Pasture Rose	3'
<i>Rosa virginiana</i>	Virginia Rose	3'
<i>Spirea tomentosa</i>	Steeplebush	3-4'
<i>Viburnum dentatum/recognitum</i>	Arrowwood	5-8'
<i>Viburnum lentago</i>	Nannyberry	15'

  

SHRUBS FOR DRY-SHADY SITES		
Scientific Name	Common Name	Mature Height
<i>Hamamelis virginiana</i>	Witch Hazel	15'
<i>Kalmia latifolia</i>	Mountain Laurel	3-8'
<i>Rhododendron nudiflorum</i>	Pinxterbloom Azalea	4-6'
<i>Vaccinium angustifolium</i>	Lowbush Blueberry	2'
<i>Viburnum dentatum</i>	Arrowwood	5-8'

**TABLE 1, Continued**

<b>TREES FOR MOIST SITES</b>		
<b>Scientific Name</b>	<b>Common Name</b>	<b>Mature Height</b>
<i>Acer rubrum</i>	Red Maple	60'
<i>Betula nigra</i>	River Birch	
<i>Chamaecyparis thyoides</i>	Atlantic White Ceder	
<i>Fraxinus pennsylvanica</i>	Green Ash	60'
<i>Picea mariana</i>	Black Spruce	40'
<i>Picea glauca</i>	White Spruce	
<i>Picea rubens</i>	Red Spruce	70'
<i>Populus deltoides</i>	Eastern Cottonwood	80-100'
<i>Populus tremuloides</i>	Quaking Aspen	30-60'
<i>Salix nigra</i>	Black Willow	40'
<i>Tilia americana</i>	Basswood	60-80'

  

<b>SHRUBS FOR MOIST-OPEN SITES</b>		
<b>Scientific Name</b>	<b>Common Name</b>	<b>Mature Height</b>
<i>Amelanchier canadensis</i>	Shadbush	15'
<i>Aronia arbutifolia/melanocarpa</i>	Chokeberry	8-12'
<i>Clethra alnifolia</i>	Sweet Pepper Bush	3-10'
<i>Cornus amomum</i>	Silky Dogwood	15'
<i>Cornus sericea</i>	Red Osier Dogwood	7-10'
<i>Cornus racemosa</i>	Gray Dogwood	6-10'
<i>Corylus americana</i>	American Hazelnut	10'
<i>Corylus cornuta</i>	Beaked Hazelnut	10'
<i>Ilex glabra</i>	Inkberry	2-6'
<i>Ilex verticillata</i>	Winterberry	10'
<i>Kalmia angustifolia</i>	Sheep laurel	3'
<i>Leucothoe fontanesiana</i>	Drooping Leucothoe	3-7'
<i>Lindera benzoin</i>	Spicebush	10'
<i>Sambucus canadensis</i>	Elderberry	6'
<i>Spiraea latifolia</i>	Meadowsweet	5'
<i>Salix discolor</i>	Pussy Willow	10'
<i>Rhododendron maximum</i>	Rosebay	12-15'
<i>Rhododendron viscosum</i>	Swamp Azalea	8'
<i>Rubus odoratus</i>	Pink Flowering Raspberry	5'
<i>Viburnum cassinoides</i>	Wild Raisin	6'
<i>Vaccinium corymbosum</i>	Highbush Blueberry	10'
<i>Viburnum dentatum</i>	Arrowood	5-8'
<i>Viburnum trilobum</i>	Highbush Cranberry	7'

TABLE 1, Continued

SHRUBS FOR MOIST-SHADY SITES		
Scientific Name	Common Name	Mature Height
<i>Corylius americana</i>	American Hazelnut	6'
<i>Cornus amomum</i>	Silky Dogwood	15'
<i>Hamamelis virginiana</i>	Witch-hazel	15'
<i>Kalmia latifolia</i>	Mountain laurel	3-8'
<i>Leucothoe fontanesiana</i>	Drooping leucothoe	6'
<i>Leucothoe racemosa</i>	Swamp doghobble	8'
<i>Lindera benzoin</i>	Spicebush	10'
<i>Lonicera villosa</i>	Mt. Fly Honeysuckle	4'
<i>Rhododendron arborescens</i>	Sweet Azalea	9'
<i>Rhododendron carolinianum</i>	Carolina Rhododendron	6'
<i>Rhododendron maximum</i>	Rosebay Rhododendron	12-15'
<i>Rubus odoratus</i>	Pink Flowering Raspberry	5'
<i>Vaccinium corymbosum</i>	Highbush Blueberry	6-8'
<i>Viburnum acerifolium</i>	Maple-leaved Viburnum	6-8'
<i>Viburnum dentatum</i>	Arrowwood	5-8'
<i>Viburnum trilobum</i>	Highbush Cranberry	6-10'

  

TREES FOR WET SITES		
Scientific Name	Common Name	Mature Height
<i>Acer negundo</i>	Box Elder	60'
<i>Acer Rubrum</i>	Red Maple	60'
<i>Acer saccharinum</i>	Silver Maple	70'
<i>Chamaecyperis thyoides</i>	Atlantic White Cedar	
<i>Fraxinus pennsylvanica</i>	Green Ash	40'
<i>Fraxinus nigra</i>	Black Ash	45'
<i>Nyssa sylvatica</i>	Black Tupelo	40-60'
<i>Platanus occidentalis</i>	Sycamore	100'
<i>Thuja occidentalis</i>	White Cedar	60'
<i>Larix laricina</i>	American Larch	80'
<i>Quercus palustris</i>	Swamp White oak	50-70'

**TABLE 1, Continued**

<b>SHRUBS FOR WET SITES</b>		
<b>Scientific Name</b>	<b>Common Name</b>	<b>Mature Height</b>
<i>Alnus rugos/serulata</i>	Speckled/Smooth Alder	10-15'
<i>Cephalanthus occidentalis</i>	Buttonbush	7'
<i>Clethra alnifolia</i>	Sweet Pepperbush	3-10'
<i>Cornus amomum</i>	Silky Dogwood	7'
<i>Decodon verticillatus</i>	Water Willow	3-5'
<i>Ilex glabra</i>	Inkberry	2-6'
<i>Ilex verticillata</i>	Winterberry	10'
<i>Kalmia angustifolia</i>	Sheep Laurel	3'
<i>Lindera benzoin</i>	Spicebush	10'
<i>Lyonia ligustrina</i>	Maleberry	2'
<i>Salix discolor</i>	Pussy Willow	10'
<i>Sambucus canadensis</i>	Elderberry	6'

**Establishment Note:** Wetland restoration/creation and establishment of riparian buffers call for planting stock adapted to moist or wet sites that also may be subject to flooding. The species listed above all occur naturally in the identified site moisture conditions, however attention needs to be given to the origin and source of the seedling stock to be planted. Origin is the geographic location where the seed or plants were first collected. Source is the supplier of the plants. Seedlings are oftentimes shipped long distances from production nurseries to wholesale nurseries from one region of the country to another. In situations like this, the species may not perform well in the habitats they will be introduced to and the plantings may fail. It is best to assure the origin and source of the material is adapted to the habitat of the planting site.